

## REMARKS

Claims 1-6 and 22-34 are pending. No claims are amended.

Rejection under 35 U.S.C. §103(a) as unpatentable over Hepp et al. (U.S. Pat. No. 3,461,183) in view of Saito et al. (U.S. Pat. No. 5,935,529).

Claims 1-6, 23-31 and 33-34 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hepp et al. in view of Saito et al. This rejection is respectfully traversed.

Applicants' inventive catalyst comprises alkali-modified Ru on zirconia which is dispersed over a large pore substrate. As demonstrated in the examples, the catalyst exhibits superior properties for producing hydrogen via the water-gas shift reaction.

Hepp et al. discloses a dehydrogenation catalyst and provides examples of dehydrogenation processes. Hepp et al. suggest a Group VIII metal, optionally treated with an alkali metal compound. The metal is dispersed on a support material that is preferably a spinel but could be a variety of other supports including zirconia. Hepp et al. do not teach or suggest any underlying support.

Saito et al. disclose a catalyst for cleaning exhaust gas. This catalyst includes a three-dimensional structure such as a honeycomb, foam, or refractory fiber assembly.

There are at least three independent reasons why the claimed invention is not unpatentable over the combination of Hepp and Saito: (1) there is not a proper motivation to combine the references; (2) neither reference suggests that altering pore size of an underlying support will optimize performance of Hepp's catalyst; and (3) Applicants' catalyst has been shown to possess unexpectedly superior properties.

1. There is not a proper motivation to combine the Hepp and Saito references. As the examiner is aware, for a combination to be obvious, it is not sufficient that the references *can* be combined but there must be a suggestion that it would be desirable to do so. In this case, neither reference suggests any advantage to adding a large pore support into Hepp's catalyst. Therefore, the claimed invention is allowable over Hepp and Saito, and the rejection should be withdrawn.

2. There is no suggestion that modifying the pore size of a large pore support can optimize the properties of Hepp's dehydrogenation catalyst. Saito discloses a catalyst for the clean up of exhaust gas. Typically, Saito's catalyst is located in the tailpipe of a car. Hepp's catalyst is entirely different and is used for dehydrogenating alkanes. Since the purposes and applications of Hepp's catalyst are entirely different from those of Saito et al., there is no reason to suspect that altering the pore size of a large pore support would be useful in optimizing the properties of Hepp's catalyst.

3. Applicant has shown that, surprisingly, catalysts having the claimed features exhibit superior results for the water gas shift reaction and these superior results are not predicted in the prior art. Thus, the claimed invention is further nonobvious based on these unexpected results.

The dependent claims are additionally patentable based on the limitations recited therein. For example, claims such as 5 and 6 that recite superior performance properties under water-gas shift reaction conditions are additionally patentable over the cited art because there is no motivation to modify the cited art catalysts for improved performance in a water-gas shift reaction.

Rejection under 35 U.S.C. §103(a) as unpatentable over Hepp in view of Saito in view of Tonkovich et al. (US 2003/0072699).

Claims 22 and 32 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hepp in view of Saito in view of Tonkovich et al. (US 2003/0072699). This rejection is respectfully traversed.

The Tonkovich reference cannot be applied under section 103. The subject matter of

Tonkovich and the presently claimed invention were subject to an obligation of assignment to the same person at the time the present invention was made, as evidenced by the common assignee in Tonkovich and the present application. As a result, under 35 U.S.C. 103(c), Tonkovich is unavailable as prior art for an obviousness analysis. See MPEP 2146. Accordingly, the rejection involving Tonkovich should be withdrawn.

### CONCLUSION

If the Examiner has any questions or would like to speak to Applicants' representative, the Examiner is encouraged to call Applicants' attorney at the number provided below.

Respectfully submitted,

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